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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,049	11/06/2003	Noriaki Fukiage	FIS920060073US1 (RAJ-014)	7419
7590 James Klekotka Suite 10 4350 W. Chandler Blvd. Chandler, AZ 85226	06/12/2008		EXAMINER TADAYYON ESLAMI, TABASSOM	
			ART UNIT 1792	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/702,049	FUKIAGE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	TABASSOM TADAYYON ESLAMI	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 12 March 2008.

2a) This action is **FINAL**.                                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-43 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-43 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____ .	6) <input type="checkbox"/> Other: _____ .

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1- 4, 9-10, 15-17, 19- 21, 23, 27-29 and 31-33 rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee.

Claim 1 is rejected. 167 teaches, a method for depositing a material on a substrate, comprises, placing a substrate in a chamber having a plasma source and on a substrate holder [ column 9 line 65]. 167 teaches depositing the ARC layer on the substrate, 167 teaches the film is R:C:O:X where the R: is silicon and X is not present ( abstract lines 4-8)[ column 9 lines 65-67], for example SiOC or SiON wherein the precursor is provided to the chamber [ Column 10 lines 4-10]. 167 teaches modifying the top layer of the deposited TERA layer to prevent the formation of a photoresist foot (poisoning) during a subsequent lithographic operation [column 10 lines 45-51]. Although 167 teaches various surface treatment to modify the surface of TERA layer, however 167 does not teach plasma treating of the surface. Lee teaches a method of making pattern on an TERA(ARC) layer by lithography and Lee further teaches to deposit SiOC or SiON as

an ARC layer [ page G58, 4th paragraph]. Lee further teaches by plasma treatment of the ARC layer before applying the resist the resist poisoning effect would be minimized and the optical properties will establish, because of formation of silicon dioxide layer [page G61 column 2 lines 2-end]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where the surface treatment is oxygen plasma treatment, because Lee teaches it helps to minimizing the persist poisoning effect and helps to establishing the optical properties.

Claim 2 is rejected. 167 and Lee teach the limitation of claim 1 and Lee. 167 teaches the surface treatment is for avoiding or minimizing the resist poisoning [ column 10 lines 45-55] and Lee teaches the resist poisoning in fact means resist footing [ page G58 column 1, second paragraph lines 16-19]. 167 and Lee both teaches since the application is to fabricate IC's and in nm size, i. e. in 167 [column 1 lines 1-3, column 1 lines 29-33], therefore the footing features should be about nm and are very small.

Claim 3 is rejected. 167 teaches forming plurality of photoresist features on the photoresist compatible surface and she further teaches the feature comprises a well defined rectangle profile [fig. 10].

Claim 4 is rejected. 167 and Lee teach limitation of claim 1 and Lee further teaches the post processing plasma contains oxygen contacting gas [page G61 column 2 lines 2-end].

Claim 9 is rejected. 167 and Lee teach limitation of claim 1 and Lee further teaches the post processing plasma has a life time of 90 seconds [ page G60, column 1 lines 6-8].

Claim 10 is rejected. 167 and Lee teach the limitation of claim 1 as discussed above and 167 teaches the TERA layer comprising two layers and depositing the bottom portion, and during a deposition a material having a refractive index (n) of 2.1 and extinction coefficient of 0.5 [column 12 line 58-59, first layer] measured at the wavelength of 248 nm [column 12 lines 30 and 64]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teaches where the TERA layer comprising two layers and depositing the bottom layer is as 167 teaches, because 167 teaches it is appropriate to have a TERA layer comprising two layers.

Claims 15, 17 are rejected. 167 and Lee teach the limitation of claims 10 and 167 further teaches the process gas comprises silicon and carbon containing precursor (tetramethylsilane) [column 8 line 59].

Claim 16 is rejected. 167 and Lee teach the limitation of claim 15 and 167 teaches silicon containing and carbon containing precursor with the rate of 10 sccm [column 8 line 60].

Claims 20 and 21 are rejected. 167 teach the limitation of claim 10 and 167 teaches controlling the pressure of the chamber and the pressure in the range of 0.2 torr [column 8 line 61].

Claim 23 is rejected. 167 and Lee teach the limitation of claim 1 and 167 further teaches depositing a top portion of the TERA layer, wherein the top portion comprises a material having a refractive index of 1.9 and extinction coefficient of 0.25, when measured at a wavelength of 248 nm [column 12 line 61].

Claims 27 and 28 are rejected. 167 and Lee teaches limitation of claim 23 and 167 further teaches the process gas comprises silicon, carbon, oxygen and argon containing gas [column 9 line 21].

Claim 29 is rejected. 167 teaches the precursor flowed with the rate of 10 sccm [column 8 line 59] and the inert flowed with the rate of 30sccm [column 9 line 22].

Claims 19 and 31 are rejected. 167 and Lee teach the limitation of claims 15 and 27 and 167 further teaches the inert gas to be argon [column 9 line 21].

Claims 32-33 are rejected. 167 and Lee teach the limitation of claim 1 and 167 further teaches controlling the substrate temperature at 60 °C [column 8 line 62].

3. Claims 11-12, and 18, 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Houn T. Nguyen et al (U. S. Patent application: 2003/0017694, here after 694).

Claim 11 is rejected. 167 and Lee teach the limitation of claim 10 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate. Neither 167 nor Lee does specifically teach the deposit rate of the bottom portion of the TERA layer is about 100-10000 A/ min. 694

teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the deposit rate of the organosilicate material is in the range of 1000-20000 A/ min [0055 lines 12-14]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the deposition rate of the TERA layer is 100-10000 A/ min, because 694 teaches it is suitable to deposit TERA layer with these deposition rate.

Claim 12 is rejected. 167 and Lee teach the limitation of claim 10 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate. Neither 167 nor Lee does specifically teach the deposition time for depositing the bottom layer is between 5-18 seconds. 694 teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the deposit rate of the organosilicate material is 20000 A/ min [0055 lines 12-14]. He further teaches the thickness of the layer is about 3000 A [0057 lines 4]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the deposition time of the bottom TERA layer is about 9 sec, because 694 teaches within this time the thickness of the TERA layer is appropriate.

Claim 18 is rejected. 167 and Lee teach the limitation of claim 15 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate. Neither 167 nor Lee does specifically teach the processing gas comprises CH<sub>4</sub>. 694 teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the processing gas comprises CH<sub>4</sub> [0053 line 3].

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the processing gas comprises CH<sub>4</sub>, because 694 teaches methane is a suitable gas for deposition of organosilicate layer.

Claim 25 is rejected for the same reason claim 11 is rejected [also see 0064 lines 2-5].

Claim 26 is rejected for the same reason claim 12 is rejected [also see 0064 lines 2-5].

4. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al ( U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of A. Grill, Journal of Applied Physics, Vol. 93 (2003) 1785-1790, here after Grill. 167 and Lee teach limitation of claim 27, as discussed above. They do not teach the precursor comprises TMCTS. Grill teaches a method for depositing SiCOH by PECVD when the precursor is TMCTS [column 2 line 4 and 27, page 1785] (mixing with inert gas (column 1 line 6 page 1786). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method for depositing SiCOH film via PECVD that 167 teaches when the precursor is TMCTS, because Grill teaches it is suitable to use TMCTS for depositing SiCOH film via PECVD process.

5. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al,

Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee, further in view of Atsushi Hiraiwa et al ( U. S. patent: 2004/0147137, here after 137)

167 and Lee teach the limitation of claim 4 as discussed above. Lee further teaches the oxygen containing gas comprises O<sub>2</sub> [page G60 column 1 lines 2-4, (oxygen ashing process)].Lee does not specifically teaches the flow rate of the oxygen. 137 teaches a method of making a semiconductor device where an oxygen plasma treatment is applied to the silicon dioxide or the TERRA layer (SiON) after deposition to improve the film quality [0293] and 137 teaches the oxygen plasma has a flow rate of 10 sccm and can be mixed with an inert gas (Ar) with flow rate of 1000 sccm[ 0198 lines 16-21]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of plasma treatment of a TERA layer as 167 and Lee teach, where the plasma comprising oxygen and inert gas with specific flow rate as 137 teaches, because 137 teaches suitable plasma treatment of a TERRA layer to obtain good properties.

Claim 6 is rejected. 167 and Lee teach the limitation of claim 4 as discussed above. Neither of 167 nor Lee does specifically teach the plasma treatment comprising hydrogen or water plasma. 137 teaches a method of making a semiconductor device where an oxygen plasma treatment is applied to the silicon dioxide or the TERRA layer (SiON) after deposition to improve the film quality [0293].137 further teaches the treatment gas in not only limited to oxygen and in fact mixed gas of hydrogen and water vapor also can be employed [0199 lines 4-16]. Since 137 teaches the mixed gas of hydrogen and oxygen (H<sub>2</sub>) plasma) can be employed for surface treatment and also

teaches the oxygen plasma treatment is also can be employed [1998]. Therefore a mixture of hydrogen and oxygen plasma with hydrogen gas flow of 0 sccm (only oxygen) would inherently beneficially treat the surface.

6. Claims 8, 13-14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee, further in view of Seon Mee Cho et al (U. S. Patent Application: 2003/0003768, here after Cho).

Claims 8, 13 and 24 are rejected. 167 and Lee teach the limitation of claims 10 and 23 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate which meets the limitation of claims 1, 10 and 24 as discussed above. Neither 167 does specifically teach the plasma source has a RF source. Cho teaches a method of deposition of organosilicate layers [0016 lines 1-4] wherein the plasma source (11) has a RF source in a power range of 10 watt/ cm<sup>2</sup> to about 200 watt/ cm<sup>2</sup> [0038, lines 3-5] frequency of 13.56 MHz [0037 lines 5-6 and 11-15]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the plasma source has a RF has the power of 1 watt/ cm<sup>2</sup> to about 500 watt/ cm<sup>2</sup>, 13.56 MHz frequency, because Cho teaches it is suitable to deposit TERA layer with having RF plasma source.

7. Claim 14 is rejected. 167, Lee and Cho teach the limitation of claim 13 above and Cho teaches a method of deposition of organosilicate layers [0016 lines 1-4] wherein

the substrate holder (12) [0035 lines 11-13] is coupled to a second RF source [00033 lines 8-23] of 0.3-3.2 watt/ cm<sup>2</sup> [0035 lines 12-13] and frequency of 0.1-200 MHz [0033 lines 16-17]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the plasma source has a RF has the power of 0.3-3.2 watt/ cm<sup>2</sup> and frequency of 0.1-200 MHz, because Cho teaches it is suitable to deposit TERA layer with having RF plasma source.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Craig A. Roderick ( U. S. Patent: 6074488, here after 488). 167 and Lee teach the limitation of claim 10 as discussed above. They do not teach the DC voltage is applied to an electrostatic chuck. 488 teaches a method of plasma deposition [column 10 lines 42-46] where a DC voltage applied to the electrostatic chuck [column 2 lines 58-60]. He further teaches the DC voltage is about 200-2000 Volts [claim 32]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of plasma deposition wherein the DC voltage to an electrostatic chuck of about 200-2000 Volts to hold the substrate and generate plasma, because 488 teaches it is desirable to deposit material on a surface by such a plasma processing to eliminate extraneous components [column 2, lines 55-65].

9. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al,

Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Tae K. Won (U. S. Patent Application: 2003/0044621, here after Won). 167 and Lee teach the limitation of claim 1 as discussed above. They do not teach controlling the chamber wall temperature. Won teaches a method of deposition of organosilicate layers [abstract lines 7-9] wherein where the chamber wall temperature is controlled [0051 lines11 to the end] in order to obtain uniform film [claim 2 lines 7-10], he further teaches the temperature is between 380-410 °C [claim 2 line 9-10]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which chamber wall temperature is controlled and is between 380-410 C, because Won teaches the deposited film will be uniform with controlling the chamber temperature between 380-410 C.

10. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Zheng Yuan (U. S. Application: 2002/0163028, here after Yuan).

Claim 36 is rejected. 167 and Lee teach the limitation of claim 1 as discussed above. 167 further teaches a shower head assembly is coupled to the chamber [120 fig. 2 and 0027 lines 3-5]. Neither of 167 nor Lee specifically teaches the temperature of the showerhead. Yuan teaches a method for depositing film on a substrate [abstract lines 1-2, 0007 lines 1-4], where the temperature of showerhead is about 90-120 C [0040 lines 3-12], to enhance the reaction time between the species. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to

have a method of deposition of TERA layer in which the showerhead temperature is controlled and is between 90-120 C, because Yuan teaches it enhance the reaction time between the species.

Claim 37 is rejected. 167, Lee and Yuan teach the limitation of claim 36 as discussed above. 167 teaches a shower head assembly is coupled to the chamber [120 fig. 2 and 0027 lines 3-5]. Yuan teaches a method for depositing film on a substrate [abstract lines 1-2, 0007 lines 1-4], where the temperature of showerhead is about 90-120 C [0040 lines 3-12], to enhance the reaction time between the species. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the showerhead temperature is controlled and is between 90-120 C, because Yuan teaches it enhance the reaction time between the species.

11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Enzo Carollo (U. S. Patent Application: 2004/0137169, here after Carollo). 167 and Lee teaches the limitation of claim 1, as discussed above. They do not teach de-chucking the substrate while the post plasma processing is being created. Carollo teaches a method of plasma deposition of silicon nitride [abstract lines 1-3], where a layer of oxide will deposit after deposition of silicon nitride [0034]. He further teaches de-chucking the substrate while generating the post processing plasma (oxygen) [claim 10]. Therefore it would have been obvious to one of ordinary skill in the art at the time of

invention was made to have a method of deposition of TERA layer that 167 and Lee teach where de-chucking the substrate while the post plasma processing is generated, because Carollo teaches it is suitable to have the substrate de-chuck during the generation of post processing plasma.

12. Claims 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Yuan-Ko Hwang et al (U. S. patent: 6238160, here after Hwang).

167 and Lee teach the limitation of claim 1, as discussed above, they do not teach de-chucking the substrate after the post plasma processing is extinguished. Hwang teaches a method of transporting the electrostatically chucking wafers for plasma processing [column 2 lines 43-45] where the de-chucking of the wafer happens after the plasma is extinguished [column 5 lines 61-65 and column 6 lines 1-3] to eliminate the negative charge from the wafer. He further teaches after that the lifter will raise the wafer [column 6 lines 3-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and lee teach where de-chucking the substrate is taught by Hwang and happens after the plasma processing is extinguished and lifting the substrate happens after the plasma processing is extinguished, because Hwang teaches de-chucking the substrate helps to remove the negative charges on the substrate.

13. Claims 41-42 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al,

Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Dan Maydan et. al. (U. S. Patent: 4951601, here after Maydan). 167 and Lee teach the limitation of claim 1 as discussed above. They do not teach lifting the substrate before the post processing plasma is created. Maydan teaches a multi-chamber for processing the semiconductor wafers [abstract lines 1-2] comprises a robot, which load and unload the wafers [abstract lines 7 and 10-12]. Maydan further the multi-chambers can be used for different processing such as deposition sputtering, etching and...[abstract lines 12-17]. Considering two-deposition process in two different chambers, the wafer is lifted by a robot to transfer from the first chamber to the second chamber [column 7 lines 26-28], before the post plasma deposition created from the second chamber. The wafer also is transferred from one deposition chamber to another chamber while the plasma is being crated in the third chamber (claim 41 rejection). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the deposition happened in Maydan's multiple processing chamber, because Maydan teaches the multiple processing chamber is suitable for processing the semiconductor wafers.

14. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee, further in view of Enzo Carollo ( U. S. Patent; 6953609, here after Carollo) and S. Avanzino, et. al. (U. S. Patent: 5776834, here after 834). 167 and Lee teach the limitation of claim 1,

as discussed above, They do not teach de-chucking the substrate before the post processing plasma is created. Carollo teaches a method of plasma deposition of silicon nitride [abstract lines 1-3], where the electrostatic chuck holds the substrate [0021 lines 1-3] and chucking and de-chucking of the substrate happens by applying or removing the direct voltage to the chuck [0021 lines 9-10]. 834 teaches a method of deposition insulating layers [title, column 2 lines 67-68 and column 6 lines 50-52] where the bias to the substrate [column 3 lines 37-38] is off [column 6 lines 63-65], which means the wafer is de-chucked, before the plasma is created. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the substrate is de-chucked before the plasma is created, because 834 teaches it is suitable method for plasma deposition of materials.

***Response to Arguments***

15. Applicant's arguments filed 03/12/08 have been fully considered but they are not persuasive.

In respond of amending claim 1, the examiner combines Lee reference with previous reference to reject the new limitation of the claim 1.

The applicant argues 167 does not teach small footing resist. However 167 teaches the effect of resist poisoning and it leads to footing (as Lee discloses).

The applicant argues amending claim 3, however claim 3 is not amended.

The applicant further argues since rejection for claim 1 is not valid, the rest of the 103 rejections have to be withdrawn. The examiner disagree since combining the Lee reference with 167 clearly reject claim 1.

### ***Conclusion***

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tabassom T. Tadayyon-Eslami whose telephone number is 571-270-1885. The examiner can normally be reached on 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T.T

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792